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ABSTRACT

The objective of this study is to do a preliminary investigation into the nature and extent of student dropout problems at the University of Alberta. To this end, the academic achievements of the class of 1964 are traced term by term over a period of 6 years. The following areas are examined in this study: (1) A quantitative general description of relative proportions of students who graduate, those who withdraw voluntarily, and those who are asked to withdraw due to poor academic performance. (2) An examination and identification of correlates of student's staying vs. dropping out. (3) Detection and isolation of primary predictors of the criterion variable, graduation vs. dropping out. The study demonstrates that: (1) Dropping out of a university is a very complex phenomenon and a better and firmer understanding of this phenomenon would require a deeper investigation. (2) Diversity within the dropout group is a reality, and to combine all dropouts into a single category is an oversimplification of the problem. (Author/PG)

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RETENTION AND WITHDRAWAL OF UNIVERSITY STUDENTS

(A Study of Academic Performance
Of a Freshman Class)

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SYNOPSIS

The main objective of this study is to do a preliminary investigation into the nature and extent of student dropout problem at the University of Alberta. To this end, the academic achievements of an entering freshman class - namely, the class of 1964 - are traced term by term over a period of six years. It is hoped that this will lead to a subsequent more comprehensive longitudinal study on the subject. Specifically, the following areas are examined in this study: (1) A quantitative general description of relative proportions of students who graduate, those who withdraw voluntarily and those who are asked to withdraw due to poor academic performance, (2) An examination and identification of correlates of Students' staying in vs. dropping out, and (3) Detection and isolation of primary predictors of the criterion variable, namely, graduation vs. dropping out.

Background information on the 1964 entering freshman class was collected from the Registrar's Office. Analysis of the data brought out the following facts:

(1) The attrition rate at the University of Alberta has remained relatively stable over the past two decades and appears consistent with the results reported by many other research studies in the area.

(2) Men and women drop out for different reasons: men mostly due to financial and academic difficulties and women for marriage and loss of study motivation.

(3) Forced withdrawals (academic dismissals) occur mostly due to poor academic achievement and voluntary withdrawals substantially due to loss of motivation and disenchantment with college experience.

(4) The variables of 'academic ability' and 'sex' appear as the primary predictors of university success vs. attrition: 'ability' expecially for men and 'marriage' for women.

(5) Academic ability measures appear relevant for study when the criterion variable is graduation vs. forced withdrawal (academic dismissal), but irrelevant for study when the criterion is graduation vs. voluntary withdrawal (especially, no-shows).

It may be concluded on the basis of above results that subtle within-group differences exist between various dropout categories. At the very least, the variables of 'sex' and 'academic standing' at the dropout time are critically relevant factors affecting the dropout phenomenon.

It should be further emphasized that since dropping out is a transaction between a student and an institution, student input variables alone cannot adequately predict and explain students' staying in vs. dropping out. A comprehensive understanding of institutional input variables, therefore, is essential for any meaningful prediction study. Another important dimension to consider in dropout studies is students' value and belief systems. By supplementing student background information by such data, it may be possible (1) to spot out potential dropouts early enough, and (2) to determine a realiable "typology" for

students in various categories to help establish a close correspondence between student needs and expectations on one hand and institutional goals and objectives on the other.

THE PROBLEM

With the recent decline in university enrollment and accompanied financial constraints, student "attrition" has become an area of increasing concern for universities as well as provincial governments. The university administrations and the governments across the country are all anxious to determine the nature and extent of student loss and to assess the student holding power of universities under the prevailing conditions. The faculty is equally eager to learn why a student with ostensibly reasonable credentials fails to obtain his baccalaureate degree either because he drops out voluntarily while in good standing or is asked to withdraw due to poor academic performance. While extensive research in this area has been going on in the United States for some time, similar research in Canadian universities is of only recent origin. The purpose of the present study is to conduct a preliminary investigation in this area at the University of Alberta. To this end, in this study,we trace the academic achievements of the 1964 freshman class for a period of six years and examine various factors contributing towards student graduation vs. dropping out. It is hoped that the present investigation will provide a basis for a subsequent more comprehensive longitudinal study on the subject. Specifically, the following aspects of the problem are examined in the present study:

1. (a) A general census description of graduation, transfers and withdrawals - forced as well as voluntary - among the full-time undergraduates in the group under study;
   (b) a comparison with similar data from previous years at the University of Alberta as well as the findings of

similar studies at other institutions.

2. Isolation and identification of correlates of graduation, academic dismissal and dropping out.
3. Detection and isolation of predictors of student academic survival versus dropping out.
4. Delineation of a typology of student dropouts based on relationships discovered in 2 and 3 above.
5. Identification of areas which should be examined in more comprehensive student attrition studies.

RESEARCH DESIGN AND ANALYSIS OF DATA

Collection of Data: Data were collected from student records in the Registrar's Office. Information collected was only for those students who had registered full-time in the winter session of 1964 for a terminal degree or diploma program and not for those registrants who had intended to transfer later to the faculties of Law, Medicine or Dentistry. The latter category of students was not included within the scope of this study.

Information on the following background characteristics was collected: sex, birth date, high school grades, year of matriculation, number of years in high school, marital status, urban or rural background, and distance of home from the University. Information on the family socio-economic status and type of high school attended seemed of dubious reliability and was, therefore, deleted from the analysis. Students' academic progress was traced, term by term, from the 1964 winter session to 1970 spring session, by collecting information on the following variables: faculty of original enrollment, enrolled degree program, year of study, registration status (full-time vs. part-time etc.), university

examination scores, reasons for change of program or faculty, year of graduation and the degree or diploma conferred.

Analysis: In the first section, the collected data are presented in the form of frequency distributions and in the second the chi-square test for contingency tables is used to detect any significant differences among these observed distributions. In section 3, the model and techniques of stepwise regression analysis is employed to detect and isolate predictors of graduation vs. dropping-out. Differences in the profiles of various subgroups - namely, graduates, academic dismissals and, voluntary withdrawals - are noted in section 4. The last section includes a discussion on the complexity of the problem and the areas which, although frequently omitted, seem critical to any investigation of student "attrition" problem.

RESULTS

I. General Description

Various estimates of proportions of entering freshmen who eventually obtain a baccalaureate degree have been reported in research studies. Although large inter-institutional differences exist in these estimates, there is a general concensus that less than 40% of entering freshmen graduate after normal progression through the institution of their first enrollment, the overall average graduation percentage being around 60% (Iffert, 1957). Summerskill (1962) in his literature review on dropouts writes:

> "In summary, American colleges lose on the average approximately half of their students in the four years after matriculation. Some 40% of college graduates graduate on schedule and, in addition, approximately 20% graduate at some college, some day. These have been the facts for several decades in American higher education." (p. 631).

Examining the results of the present study, we find a close proximity between our estimates and those reported above. In Table I we observe that approximately 63% of the 1964 entering freshmen had graduated by the winter session of 1970 - 48.33% graduating in the program of their initial choice and 14.3% after transferring into another program. Of the remaining, approximately 4% were still enrolled while 10.5% were advised to withdraw due to poor grades (academic dismissals), the rest 23% being dropouts - 7% defaulters and 16% no-shows. Defaulter is a term used for students who drop out voluntarily during the term without appearing for term final examinations and no-show refers to students who complete the term work successfully but do not show up in the following term. Further, out of the 63% graduates, 44.4% graduated on schedule and 18.2% took a year or two longer.

The following facts are also noteworthy at this point. Proportionately more men changed their fields than women. Only about one-third of the total voluntary dropouts are "defaulters", namely, those who disappear (presumably) for fear of impending examinations and resulting academic failure. More than 50% of withdrawals occurred within the first two years (see Table 2) suggesting that the first two years at the university serve as a screening period for students. The greatest proportion of academic withdrawals are among the academically less talented (cf. Thistlewaite 1963).

TABLE 1

ACADEMIC ACHIEVEMENT OF 1964 ENTERING FRESHMAN CLASS

FACULTY	GRADUATES	TRANSFEREE GRADUATES	CONTINUING STUDENTS	ACADEMIC DISMISSALS	VOLUNTARY DROPOUTS (Defaulters)	VOLUNTARY DROPOUTS (No-Shows)	TOTAL
	Students With A Degree		Students Without A Degree				
Agriculture	34	2	-	15	3	5	59
Arts	183	49	4	26	16	52	330
Bus. Admin. & Comm.	64	17	1	13	10	23	128
Dental Hygiene	14	-	-	2	1	1	18
Education	230	37	56	39	26	165	553
Engineering	119	22	8	42	25	19	235
Household Economics	23	5	1	1	0	3	33
Med. Lab. Sc.	6	9	-	5	7	1	28
Nursing	22	9	-	2	4	1	38
Pharmacy	44	4	1	6	7	3	65
Physical Education	46	4	-	7	6	5	68
Rehab. Medicine	19	3	-	7	1	4	34
Science	149	121	8	42	37	26	383
Misc.*	3	-	1	1	-	1	6
Total	956	282	80	208	143	309	1978
					452		
Percentage	48.33	14.26	4.04	10.52	22.85		100%
	62.59		37.41				

* Registrants without an option.

TABLE 2

YEAR OF WITHDRAWAL

FACULTY	1964-65	1965-66	1966-67	1967-68	1968-69	TOTAL
Agriculture	3	2	2	1	-	8
Arts	23	18	16	9	2	68
Bus. Admin. & Comm.	12	7	1	8	5	33
Education	36	80	51	22	2	191
Engineering	20	6	7	6	5	44
Household Economics	1	1	1	-	-	3
Physical Education	2	6	2	1	-	11
Science	23	12	10	9	9	63
Misc.	1	-	-	-	-	-
Total	121	132	90	56	23	422
		MEDICAL GROUP				
Dental Hygiene	2	-	-	-	-	2
Med. Lab. Sc.	3	1	2	2	-	8
Nursing	2	1	2	-	-	5
Pharmacy	7	1	1	1	-	10
Rehab. Medicine	2	2	1	-	-	5
Total	16	5	6	3	-	30
Grand Total	137	137	96	59	23	452
Percentage	30.3	30.3	21.2	13.1	5.1	100%

Comparing these results with those of an earlier unpublished study at the University of Alberta, we observe that the gross attrition rate has remained more or less stable over the last two decades. Mr. Harold Hawes, presently in the faculty of Graduate Studies and Research, traced the history of the 1951 entering freshman class over a period of ten years. His results along with corresponding results of the present study are given in Table 3. One should exercise caution, however, in comparing the attrition rates for individual faculties in view of several structural and compositional changes in a number of faculties during this period. It is the university-wide attrition rate which has remained more or less stable over this period.

It should also be noted that if 'university success' includes the completion of two-years' teacher certification program in the faculty of education, then the graduation figures presented in Table 1 would need modification. This is important since a good proportion of students in the faculty of Education used to register with the intention of completing this certification program (the teaching certification requirements have since changed). The revised figures for the "graduate" category (including certificate students) are given in Table 4.

To recapitulate, we can conclude from the above findings that (1) the results of the present findings show close proximity to the results of other similar research studies and (2) that, if the nature and extent of student loss constitutes a measure of institutional efficiency, then the University of Alberta has done, over the years, a remarkably good job in retaining and leading towards degree completion better than average proportions of entering freshmen.

TABLE 3

A COMPARISON OF UNDERGRADUATE STUDENT GRADUATION RATE
AT THE UNIVERSITY OF ALBERTA OVER TWO DECADES

FACULTY	1951 FRESHMAN CLASS	1964 FRESHMAN CLASS
Agriculture	70.0	61.0
Arts	59.7	69.5
Bus. Admin. & Comm.	70.6	63.3
Education	41.5	48.3
Engineering	61.1	60.0
Household Economics	72.7	85.2
Science	69.0	70.1
Total	63.5	65.3

II. Relationships

The variable "sex" is not a significant factor in a student's dropping out or staying in: as many men drop out as women (cf. Panos and Astin, 1967). However, significantly more men are advised to leave or are dismissed due to poor academic achievements and significantly more women drop out voluntarily while in good academic standing ($P < .001$). The voluntary withdrawal of women over the three or four year period tends to equalize the attrition rates for the sexes. Dropouts tend to have a higher mean age and a wider age range. The significance of the age variable lies, probably, not in age per se but rather in the increased extra-academic demands, responsibilities and pressures that older students face (cf. Gonyea, 1964; Chase 1965). High school grades are significantly related to graduation both for men and women ($P < .001$): the higher the high school grades, the better the probability of a student's graduating vs. academic dismissal. However, this relationship does not hold when comparing the chances of graduation vs. voluntary withdrawal (cf. Slocum, 1956; Summerskill, 1962; Knoell, 1966). Marriage as such is not a related factor but marriage after entrance to the university is a significant factor in a woman's dropping out ($P < .001$): approximately 30% of women students get married after entrance to the university and one-third of these women voluntarily drop out in good standing, suggesting that marriage is an important factor in womens' voluntary withdrawal from the university (cf. Slocum, 1956; Iffert, 1957; Panos and Astin, 1967). The type of urban-rural family residence is positively related to graduation vs. dropping out only in case of women students ($P < .05$): women dropouts are more likely to come from rural, small town family background (cf. Cope, 1967). Home distance from college is signi-

TABLE 4

REVISED PERCENTAGES OF GRADUATES INCLUDING
TWO YEARS EDUCATION CERTIFICATION

FACULTY	GRADUATES	TRANSFEREE GRADUATES	EDUCATION CERTIFICATION	REVISED CONTINUING	REVISED ACADEMIC DISMISSALS	REVISED VOLUNTARY DROPOUTS		TOTAL
						(Defaulters)	(No Shows)	
Agriculture	34	2	-	0	15	3	5	59
Arts	183	49	11	2	25	16	44	330
Bus. Admin. & Comm.	64	17	2	1	13	10	21	128
Dental Hygiene	14	-	-	-	2	1	1	18
Education	230	37	205	1	34	21	25	553
Engineering	119	22	2	6	42	25	19	235
Household Economics	23	5	2	-	1	0	2	33
Med. Lab. Sc.	6	9	2	0	5	6	0	28
Nursing	22	9	1	0	1	4	1	38
Pharmacy	44	4	1	1	6	7	2	65
Physical Education	46	4	1	0	7	6	4	68
Rehab. Medicine	19	3	1	0	6	1	4	34
Science	149	121	5	7	41	37	23	383
Misc.	3	-	-	1	1	-	1	6
Total	956	282	233	19	199	137	152	1978
Percent	48.33	14.26	11.78	.96	10.05	6.92	7.68	100%
Grand Total	1471 74.36 Persons With A Degree/Certificate			507 25.63 Persons Without A Degree/Certificate				

ficantly related to a student's dropping out ($P < .05$ for men and $P < .001$ for women). It would possibly be due to a desire to be closer to home (cf. Wood, 1963; Stordahl, 1967). The variable 'matriculation year' is also a related factor: students who enter university straight after high school graduation are more likely to graduate than those who postpone entering the university for some time ($P < .05$ for men and $P < .001$ for women). One possible explanation for this seems to be that the same financial or other reasons which force students to delay entering a university continue to persist and contribute towards their later withdrawal. The variable 'year of matriculation' as such, thus, seems to be related to graduation vs. dropping out only indirectly. Finally, the variable 'number of high school years' is significantly related to a student's staying in vs. dropping out ($P < .05$) and this relationship holds both for men and women.

III. Reasons for Dropping Out

Most research studies treat dropping out as if it is a unitary phenomenon. Yet research studies have consistently shown that student withdrawal may be due to one or a combination of many different reasons. Reasons for dropping out for men and women, for example, are quite distinct; so are the reasons for academic failures against those who drop out in good academic standing. Keeping in view the importance of these considerations, the data were analysed separately for men and women and also for academic failures and voluntary withdrawals.

It was not possible to present reasons cited by students in neat percentages since some of the students mentioned more than one reason; nor was it considered advisable to test statistically for

significance of differences among cited reasons by different subgroups, since only one-third of the dropouts had recorded their reasons. However, a rough schema of the three major reasons for dropping out for various dropout subgroups is presented in Table 5.

TABLE 5

MAJOR REASONS FOR WITHDRAWAL
BY SEX AND ACADEMIC STATUS

Importance of Reason for Withdrawal	Sex		Academic Status	
	Men	Women	Academic Failures	Voluntary Withdrawals
Loss of study interest and motivation	#3	#2	#3	#1
Financial Difficulty	#1		#4	#2
Unsatisfactory College experience	#2	#3	#2	#3
Low GPA			#1	#4
To get married		#1		

Lack of financial means appears to be a more substantial problem for men than for women - especially for men with satisfactory academic standing. In contrast, men with poor academic standing rank poor financial resources only fourth in importance, after low grades, disenchantment with college experience, and loss of study interest and motivation.

Students with satisfactory academic standing (voluntary withdrawals) mention loss of study interest, lack of financial resources and disenchantment with college experience as the three major reasons. It is revealing to

note that unsatisfactory grades ranks fourth in the list of reasons for this group - minimal grades are not satisfactory enough to all students.

Whereas men cite financial difficulty, unsatisfactory college experience and loss of motivation as the three major reasons for their dropping out, in womens' case marriage ranks first followed by loss of motivation and unsatisfactory college experience.

Succinctly, it appears from the above that more men drop out due to financial and academic reasons and more women due to marriage and loss of motivation reasons. One out of every three dropouts occur due to academic difficulty and two out of three due to undefined educational and career objectives. Loss of motivation is typically cited as a major reason for dropping out suggesting that students today are perhaps more concerned with the relevance of education for their personal growth. Removal of financial barriers, thus, would only help to lessen but not eliminate the causes of student attrition. It is perhaps the restructuring and reorganization of curriculla and study programmes which may possibly retain student interest and, thus, motivate them to complete college education.

IV. Predictors of Staying in Vs. Dropping Out

A number of prediction studies undertaken to delineate variables contributing maximally to university success vs. dropping out have been completed. The results of these studies, however, have not been very encouraging. Astin (1964) investigated the contribution of 38 student input variables (18 biographic and 20 personality) and 15 institutional variables towards the graduation vs. dropout criterion

variable. Using the multiple regression analysis techniques, he discovered that less than 10% of the variance was accounted for by these student input variables. In an analogous longitudinal study, Panos and Astin (1967) analysed the effect of 120 student input variables and 36 institutional variables on a representative sample of 1961 freshman class throughout the United States. The multiple correlation of all significant student input variables accounted for approximately 9% of the criterion variance. Bayer (1968) in a similar study arrived at the following conclusion:

> "...The results of this study again illustrate our inability to predict with any great deal of accuracy which students will drop out of college and which will not. With a perspective based on the large body of other similar research evidence, it is apparent that other "traditional" measures of students' characteristics and backgrounds are not likely to yield significant increases in the ability to predict any general criteria of college completion" (p. 315).
>
> "The results of this study do suggest at least one other approach which may prove to increase substantially our ability to predict college outcomes, however. That is, the abilities measures emerged as the primary correlate(s) of college progress and attrition among males while the family of procreation variables emerged as the primary predictors of outcomes among females (underlines ours)...These sex differences, and the observed weak relationship of the socio-economic variables with the criterion, suggest that there may be significant differences among those in the dropout group which, if introduced in a research design, might substantially increase our ability to predict aggregate and individual chances of college completion" (p. 315).

Although in the present study only few student input variables were used, we were curious to investigate their contribution towards the criterion variable, namely graduation vs. withdrawal. It was our hope to achieve two objectives: (1) to isolate the primary

predictors of the criterion variable and, (2) to test Bayer's hypothesis that ability and sex measures are the significant factors in bringing out masked within-group differences among dropouts.

To this end, we applied the technique of stepwise multiple regression analysis. The outcome was a corroboration of both Bayer's and Panos-Astins' hypothesis: While 120 student input variables in Panos and Astin's (1967) study could explain about 9% of the total criterion variance, eight student input variables used in the present study accounted for 5% of the total criterion variance. Furthermore, two variables, namely,'high school grades'and'sex'account for three-fourths of the variance explained by the initial eight variables and almost all of the remaining one-fourth is explained by the variable 'distance from home'. The remaining five input variables contributed practically nothing to the criteron variance. This is hardly surprising, since 'marital status' is significantly related to sex (r = .38), and 'age' to 'high school graduation year' (r = .43) and 'number of high school years' (r = .51). Our analysis further showed that the variable 'high school grades'is the prime predictor of graduation vs. forced withdrawal (academic dismissal) both for men and women, but does not predict graduation from voluntary withdrawal (especially for no-shows), suggesting that this is a relevant variable when studying forced withdrawal but, perhaps, irrelevant when studying voluntary withdrawal. Our data, in fact, showed that many of the voluntary withdrawals actually had significantly higher high school as well as university grades than did the graduates. On the other hand, the variable'sex'is a prime predictor of graduation vs. voluntary withdrawal.

The main conclusions that can be drawn from the above analysis is that the variables 'ability' and 'sex' are the chief

predictors of a student's staying in vs. dropping out: 'Ability' in predicting staying in from forced withdrawal and 'sex' in predicting staying in from voluntary withdrawal.

V. Typology of University Undergraduates

On examining results reported in sections 2, 3 and 4 above for each of the subgroups, namely, graduates, academic dismissals, defaulters and no-shows, one comes across certain distinguishing features characterizing each of these groups.

A graduate tends to be, on the average, a twenty-one year old single person with urban family background. He is likely to have achieved above average high school grades, completes high school in normal span of time (i.e., three years) and enters university straight after passing high school.

An academic dismissal, on the other hand, is more likely to be a single, male and academically marginal student. He is somewhat older in age than a graduate; often comes with a rural family background. In some cases, he is likely to take a year or so off before seeking enterance to the university.

A defaulter tends to be similar to an 'academic failure' on the variables sex and high school grades. On the other hand, he is more likely to be a married person and seems to have additional family and financial responsibilities which do not leave him enough time for studies. Since he usually has taken a break between high school graduation and university entrance, he is diffident about his performance in final examinations which may lead to his disappearance before the examination period. He is likely to be older in age than a 'graduate' or 'academic failure'. Mature students who drop out before taking final examinations fall in this category.

A no-show student is generally a female who gets married during her progress at the university; she completes her final examinations successfully, but does not show up in the following term. Her reasons for withdrawal are generally marriage or personal (non-academic). She tends to be similar to a 'graduate' on the other variables.

VI. Conclusions and Discussion

While this study was meant to be essentially preliminary in nature on which to base a later more comprehensive longitudinal project, it has, indeed, raised many more questions than it has provided answers for. It has clearly demonstrated that dropping out of university is a very complex phenomenon and a better and firmer understanding of this phenomenon would require a deeper investigation and substantially more information about students and institutions.

It has further demonstrated that diversity within the dropout group is very much a reality and to combine all dropouts into a single global category is an oversimplification of the problem which conceals subtle but important differences among distinct dropout categories. The categories given rise to by the variables sex and academic ability should be studied separately.

It is very necessary to include in a larger dropout study some measure of students' educational objectives and aspirations, since some students may enter university with little intention or motivation at the outset to complete a baccalaureate degree. Perhaps they enter university just to satisfy parental wishes, or get married or simply because "there is nothing else to do". (Mehra, 1971). For them dropping out is merely an expression of an undefined

and vague educational and career objectives.

A student who decides to leave only temporarily may face an altogether different eventuality relative to a student who decides to withdraw for good. For some students the decision to leave university temporarily may represent a wise and constructive solution in resolving questions of personal identity and direction, life-style or career choice etc.

Whereas information on reasons cited for withdrawal is available for those students who are asked to leave, adequate information is very seldom available about those who drop out voluntarily. They simply disappear from the campus. The Registrar's Office or the department concerned may never know what happened to such individuals. As a result, student records are very seldom complete and dropout information is available only in terms of numbers of those who have withdrawn voluntarily. Some mechanism to obtain adequate information about all dropouts seems very essential for comprehensive dropout studies.

Most attrition studies have limited their investigation to study biographical, academic, social and psychological characteristics of dropouts vs. graduates, without taking into account the characteristics of institutions they drop out from. Yet we all know that dropping out is a transaction between a student and the educational institution. For example, dropping out from a traditional divinity or religious college may be for quite different reasons than dropping out from a progressive liberal arts college.

Finally, a very important dimension to consider in such attrition studies is the overall factor of student opinions, values, attitudes and beliefs. In fact, by supplementing the usual background data with information on preceding variables, a way may be found perhaps to spot out early enough students who are likely to drop out and take steps to prevent this

eventuality. By following this approach it may be also possible to determine a reliable "typology" for students in various categories to help establish a close correspondence between student needs and expectations on one hand and institutional goals and objectives on the other.

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